



To Study Articular and Abarticular Manifestations in Type 2 Diabetic Patients

Authors

Dr Abhimanyu Singh¹, Dr V.R. Wagh²

¹Resident (MD, Medicine), D.Y. Patil Medical university, Kolhapur

²Professor, Dept. of Medicine, D Y Patil Medical College, D.Y. Patil Medical University, Kolhapur

Corresponding Author

Dr Abhimanyu Singh

Abstract

Prevalence of diabetes is on rise with change in life style in India so are the complications of diabetes. Various articular and abarticular manifestations are diagnosed on the clinical basis rather than investigation findings. These manifestations are not studied very frequently in India and world also. These manifestations affects the quality of life in type 2 diabetic patients. In absence of definitive tools for diagnosis, clinical diagnosis is mainstay for detection. Prevalence of these manifestations are in 51% of type 2 diabetes mellitus patients in Kolhapur district. These manifestations can be presenting features of diabetes mellitus as some of these manifestations are unique in nature they can lead to diagnosis. Osteoarthritis of knee, hip and spine was most common presenting manifestation in all cases studied. Carpal tunnel syndrome and adhesive capsulitis are next two major presenting manifestations. These manifestations are associated with HbA1c, fasting blood sugar level, body mass index and most importantly duration of diabetes. Overweight patients were strongly associated with manifestations. Life style management and medical intervention should be considered in these patients. There was linear correlation was seen between duration of diabetes and these manifestations. As well as hypertension and glycemic control can result in good outcome with these morbidity.

Introduction

Diabetes mellitus accounts for a number of vascular complications, which impair patients' survival. Musculoskeletal complications are also found, and although less valued than the vascular ones, they significantly compromise the patients' quality of life. The incidence of DM and the life expectancy of diabetic patients have both increased, resulting in an elevation in the prevalence and clinical importance of those osteomuscular changes. The following have been described in diabetic patients: stiff hand syndrome; Dupuytren's contracture; trigger finger;

shoulder capsulitis; calcific periartthritis of the shoulder; carpal tunnel syndrome; muscular infarction; diffuse idiopathic skeletal hyperostosis (DISH); and Charcot's arthropathy.¹

In addition, a higher prevalence of the following has been reported: crystal arthritides; infections; osteoporosis; and osteoarthritis. Various rheumatological manifestations are known some of which are pathophysiologically associated with diabetes mellitus and few are not well established but have affection to diabetes and less known.

Methodology

Information obtained from the patients' symptoms and informed consent was taken to involve in study. All patients had a complete systemic examination. Patients who were having diabetes type 2 disease on or off medication we recorded following data: demographic features, including age, sex, daily activity (walking, running, physical activity for at least 3 times a week), and body mass index (BMI) & patients is regularly taking medication and various diabetic complication and associated complaints were taken in consideration. Following clinical information recorded: duration of diabetes (in years), disease control (FBSL & PPBSL), X-ray and if needed CT scan/MRI.

Results

A total of 2210 patient with type 2 diabetes were studied from 2015 to 2017 in D.Y. Patil hospital. Out of these patients 1132(51%) patients had various articular and abarticular manifestations. 1078 patients had no manifestations. We observed that Osteoarthritis was the most prevalent symptom in the all the articular and abarticular manifestations which was present in 865 patients. Osteoarthritis was present in 39% of total patients compared to 76% in all the patients with manifestation. Carpal tunnel syndrome was the second most common symptoms. Adhesive capsulitis is third most common manifestations in type 2 diabetic patients. Both manifestations are 390 and 384 respectively with overall percentage 18% and 17% in all the patients. Carpal tunnel and adhesive capsulitis are present in 34 % each of all patients with manifestations.

Dupuytren's contractures was fourth most common manifestations in 212 patients and 19% of patients with manifestation. Cheiroarthropathy (LJMS) was present in 204 patients (18% of patients with manifestations). Flexor tenosinovitis and DISH were present in 8.46% and 7.4% of all the patients. Charcot joint, reflex sympathetic dystrophy and muscle infarction was the least common manifestations with 0.2%, 1.5% and 0.18% in all the patients respectively.

Table 1 Distribution of various manifestations in study

Articular and Abarticular Manifestations	Number of Patients
Osteoarthritis	865
Carpal Tunnel Syndrome	390
Adhesive Capsulitis	384
Dupuytren's Contractures	212
Cheiroarthropathy	204
Flexor Tenosinovitis	187
DISH	164
Diabetic Amyotrophy	81
Charcot Joint	45
Reflex Sympathetic Dystrophy	35
Muscle Infarction	4

Discussion

In our study we found that a total of 1132 patients with type 2 diabetics out of 2210 are suffering from any one of the manifestation or multiple manifestation. The overall prevalence of these manifestation is 51.2%. RP Agrawal et al² in their study found that 57% of all diabetic patient are having same manifestations (type1 and type 2) which is similar to our study. Suzan Attar et al³ observed these manifestations at very low level in their study at only 17.8% that is may be due to very low sample size and inexperienced staff (data was collected by staff nurse).

Most common manifestation is osteoarthritis in which it is present in 39.4% of patients in all the patients. We included osteoarthritis of knee, RP Agrawal et al found it 36% of patient.² Carpal Tunnel syndrome and Adhesive capsulitis are both present in approx 17% of patients. Halesha BR⁴ found it in 11 and 18% respectively while RP Agarwal et al found adhesive capsulitis in 22%. Duputren's contracture is present in 10% of patients. Tariq Ahmed Bhat et al found it in 7% of patients.⁵ While RP Agrawal also found it in 7% of patients.² Limited joint mobility syndrome also known as cheiroarthropathy was present in 10% of patients. It was in 18% of patient studied by RP agrawal. Trigger finger and de Quervain's tenosynovitis is included together and they are present in 8.4 % of patients. Suzan Attar³ having similar findings in their study. Diffuse skeletal hypertrophy syndrome is present in 7.4% of patients. which is present in 15% of patients in RP

Agarwal study². Diabetic Amyotrophy was found in 3.6% of patients which is present in 4.8% of patient studied by Suzan Attar et al. Diabetic muscle infarction is present in 0.18% of patients similarly charcot joint is present in 2.0% of patients and reflex sympathetic dystrophy is present in 1.5 % of patients.³ Last three findings are similar to other studies done elsewhere with least common prevalence.

Our study have male to female ratio of 1 : 0.72 in favor of males. With p value of 0.59 no significant correlation is found with gender to various manifestations. Total males 58% in our study and females are 42%. We also studied age of the patient in correlation with various manifestations. Most of our patient are in senior citizen category. 600 of our patient are above the age of 60 and are presented with various manifestations.

500 of our patients are smoker out of which 256 were having articular and abarticular manifestations. With p value of 0.7469 there was no statistical correlation is found between smoking and various manifestations. 406 of our patient were alcohol dependent with p value of 0.1115 we not find any statically correlation between manifestations and alcohol dependence.

Body mass index (BMI) is considered as major risk factor for various diseases. we found that 1506 patients are having BMI of more than 25 and 796 patient with musculoskeletal manifestations are having BMI more than 25. There is p value of

0.0246 and strongly correlated with manifestations.

This was postulated by many researchers that poorly controlled glycemic state is a risk factor for various manifestations. We studied fasting blood sugar level and glycated hemoglobin (HbA1c). There is linear correlation found between these two and various manifestations. With increase in value of fasting blood sugar level and glycated hemoglobin number of manifestations also increases.

328 patients were having manifestations with control HbA1c between 5.6 to 6.4 or below. Most of our patients (804) having HbA1c more than 6.5. The correlation of HbA1c with the manifestations was found strongly correlated with p value of 0.0001. This is similar to various studies done in India. Sarkar P et al⁶ and RP Agrawal² also found similar results in their studies.

Fasting blood sugar level is more than 126 mg/dl in 707 patients. With p value of 0.0001 it is strongly correlated to the manifestations. Duration of diabetes was also found strongly correlated to manifestations with p value of 0.0001. 720 Patients are having diabetes for more than 5 years. Hypertension is found in 1068 patients. Out of 1068, 612 hypertensive are having manifestations. P value is 0.001 and strongly associated with all the manifestations.

Comparison of present study with other studies around the globe on articular and abarticular manifestations in diabetic patients (table 2).

Manifestations	Suzan Attar et al ²	RP Agrawal et al ¹	Halesha BR Krishnamurthy ⁴	Fatima Ezzahra Abourazzak ⁷	Present Study
Overall Prevalence	17.8%	57.01%	-	-	51.2%
Osteo-arthritis	-	38.1%	-	49%	39.4%
Carpal tunnel syndrome	6.7%	-	11%	29%	17.6%
Adhesive Capsulitis	6.7%	22.6%	18%	23%	17.3%
Duputren's contracture	0.4%	6.7%	17.5%	12.1%	9.7%
Limited joint mobility syndrome	3.2%	18.7%	13.5%	16%	9.7%
Trigger Finger*	4.4%	7.5%	6.5%	7%	8.4%
Diffuse skeletal hypertrophy syndrome	0.4%	15.1%	16.25%	-	7.4%
Diabetic Amyotrophy	4.8%	-	6.75%	-	3.6%
Charcot Joint	0.4%	3.1%	3%	-	2.0%
Reflex sympathetic dystrophy	0%	-	1.5%	-	1.5%
Diabetic Muscle Infarction	0.4%	-	0.75%	-	0.18%

Conclusion

We concluded that most common manifestation was osteoarthritis (39%) followed by Carpal tunnel syndrome (18%) adhesive capsulitis (17%) and Dupuytren's contracture (9.59%). These manifestations had strong correlation with duration of diabetes, body mass index, fasting blood sugar level and glycated hemoglobin. Most common co morbidity was hypertension in all the patients.

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